

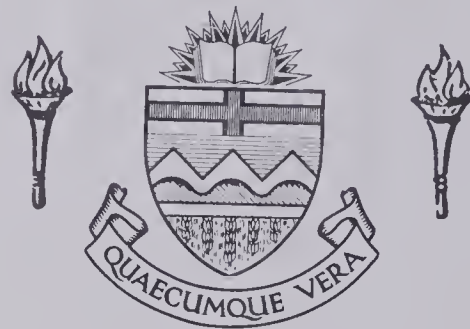
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LANGUAGE LABORATORY USE AND ACHIEVEMENT
IN FRENCH LANGUAGE STUDY IN ALBERTA

by



PIERRE L. TOUCHETTE

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Language Laboratory Use and Achievement in French Language Study in Alberta" submitted by Pierre L. Touchette in partial fulfillment of the requirements for the degree of Master of Education.

ABSTRACT

The purpose of this study was to investigate the contribution of language laboratories to French language instruction in Alberta. Data for the study were obtained for 37 schools of which 14 were library mode (which makes provision for recording and playback), 6 were broadcast mode (listening and speaking only), and 17 were non-laboratory schools.

The measure of student achievement used in the study was the June 1966 French 30 Departmental Examination for audio comprehension and writing skills. Teacher data were obtained by questionnaire, student data were obtained from records in the Examinations Branch, Department of Education. Additional student variables were included in an in depth study of two large metropolitan schools. A total of 1171 students formed the sample for the major part of the analysis.

While the non-laboratory group scored higher on audio comprehension than either of the two laboratory groups, library and broadcast mode, the differences between the means were statistically not significant. Contributing significantly to the variance were student SCAT scores, French university courses taken by the teacher, years of experience teaching French, and total years of teaching experience. In the depth study lineage of the student and socio-economic rating also contributed significantly to the variance.

On the conventional writing skills examination the non-laboratory group had the highest mean score followed by the broadcast mode group. The library mode group had the lowest mean score on this examination. Tests of differences between these means revealed that the library mode group differed significantly from both the non-laboratory and the

broadcast mode groups; however the latter two means did not differ significantly from each other. Contributing significantly to the variance were SCAT scores, French university courses taken by the teacher, fluency rating of the teacher, and minutes per week of laboratory use. When the relationship between amount of laboratory use and achievement was examined, the broadcast mode group, who used the laboratory 30 or fewer minutes per week, surpassed the other groups in the study.

From the results of the analysis on French 30 examinations it was concluded that non-laboratory students on tests of audio comprehension performed as well as or better than either of the two laboratory groups. On tests of conventional writing skills non-laboratory groups scored as well as or better than either of the two laboratory groups. However, broadcast mode groups appeared to perform better than non-laboratory groups when limited rather than extensive use was made of that teaching aid.

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

I. INTRODUCTION

School administrators have been called upon to make decisions on whether funds should be allocated for the installation of language laboratories for use in French instruction. As yet, the use of these laboratories has not become widespread in Alberta. In this sense, the language laboratory might be considered an innovation in Alberta education.

Graham defines an innovation as "a new practice whose acceptance can be easily discovered, and which has been introduced sufficiently recently for a considerable proportion of the population to be still in the process of adopting it."¹ Miles defines an innovation as "a deliberate, novel, specific change, which is thought to be more efficacious in accomplishing the goals of a system."² Holdaway reported that the principal was found to be a significant figure in the adoption of educational innovations.³ Carlson, on the other hand, placed the superintendent in a central innovating position.⁴ Holdaway concludes that:

¹Saxon Graham, "Class and Conservatism in the Adoption of Innovation," Human Relations, IX (February, 1956), p. 92.

²Matthew B. Miles (ed.), Innovation in Education (New York: Bureau of Publications, Teacher's College, Columbia University, 1964), p. 14.

³Edward Allen Holdaway, "Factors Affecting School Innovation" (unpublished Master's thesis, The University of Alberta, Edmonton, 1966), p. 96.

⁴Richard O. Carlson, Adoption of Educational Innovations (Eugene: The Center for the Advanced Study of Educational Administration, 1965), pp. 10-11.

It would appear to be sound to postulate that all educators in positions of authority, including teachers, exert some influence on the adoption of new practices, and that in any given educational system, various types of innovations require the approval of personnel at different administrative levels."⁵

A survey of all Alberta school superintendents recently completed by the writer on the prevalence and use of language laboratories in the secondary schools of Alberta revealed that the language laboratory is a recent innovation in this province. Superintendents reported that the first language laboratory was installed in 1962. This innovation has spread quite rapidly; as of January, 1967, there were forty-one language laboratories in Alberta secondary schools. These were in twenty-six of the seventy-four superintendencies of the province. Furthermore, the survey revealed that twenty school divisions, counties or districts were intending to install language laboratories in their schools during 1967. A superintendent of a large metropolitan school district reported that his school board had already completed plans to install language laboratories in all senior high schools in the district by 1972. Many of the areas that already have language laboratories state that additions to equipment are going to be made, that more student booths are going to be put in, or that language laboratories will be installed in other schools in their areas.

It is apparent from the survey that language laboratories are as yet an innovation in Alberta, as they are in other Canadian provinces, and that many school administrators are in a position of having to make a decision on whether or not to purchase language laboratories for their locality. Unfortunately, little objective evidence on the usefulness

⁵Holdaway, op. cit., pp. 96-97.

of language laboratories in language instruction is available to assist them in making a decision. Haber writes of the difficulty of making such a decision:

Hybrid corn clearly has greater yield per acre than older seeds, and simple experimentation will document this. But how does a potential adopter tell whether changes in childrearing practices lead to improved development in his child? The reasons for this difference are complex, though not relevant here. But because of them, the adopter of behavioral science innovations is usually unsure, before he has made the investment, whether or not it will work.⁶

II. THE PROBLEM

Statement of the problem. The general purpose of this study is to investigate the contribution of language laboratories to French language instruction in Alberta.

The sub-problems, stated as questions, are:

1. Are there significant differences between broadcast mode, library mode and non-laboratory students in French language audio comprehension?

2. Are there significant differences between broadcast mode, library mode, and non-laboratory students in French language writing skills?

Significance of the study. The results of a survey by the United States Office of Education and the Modern Language Association in 1957

⁶Ralph Norman Haber, "The Spread of an Innovation: High School Language Laboratories," The Journal of Experimental Education, XXXI, No. 4 (Summer, 1963), p. 359.

indicate that sixty-four public and private secondary schools and 240 public and private institutions of higher education used language laboratories for foreign language instruction.⁷ Just four years later, in 1961, the U. S. Office of Education estimated 2500 secondary schools and seven hundred colleges and universities were using language laboratories.⁸ Moreover, Donald Walsh, Director of the Modern Language Association, reported that by 1962 the number of language laboratories in public secondary schools had reached five thousand.⁹ Bumpass, speaking of future trends states that:

The installation and the use of language laboratories will continue to spread at an even more rapid pace in the next decade. By 1975, most all of our High Schools in the United States will be using this media [sic] as supplementary and enrichment activity for their foreign language students.¹⁰

A recommendation made in the royal commission report of inquiry on education in the province of Quebec indicates that there is a need for language laboratories in that province,

. . . as much in English as in French schools, as much for the teaching of the mother tongue, as for the teaching of the second language or of foreign languages, secondary schools must be equipped with language laboratories.¹¹

⁷Joseph C. Hutchinson, Modern Foreign Languages in High School: The Language Laboratory (U. S. Department of Health, Education, and Welfare, Washington: Government Printing Office, 1961), pp. 1-2.

⁸Ibid.

⁹Donald Walsh, "The Role of the NDEA," Saturday Review (Feb. 16, 1963), p. 73.

¹⁰Donald E. Bumpass, "Language Laboratories: Bridge or Deterrent?" Journal of Secondary Education, XXXIX (November, 1964), pp. 317-20.

¹¹Report of the Royal Commission of Inquiry on Education in the Province of Quebec, 1964, Part II (The Government of the Province of Quebec, 1965), p. 142.

The district superintendent of West Vancouver, British Columbia reports that installations of language laboratories in its three high schools were being started in January, 1967 at a cost of \$16,000 for each installation. The report continues with the statement that: "The language labs will use electronic devices to improve the teaching of foreign languages in the district's three high schools."¹²

In summary, an attempt was made to show that the spread of this innovation, language laboratories, has been rapid in the United States and in Alberta. Statements from two other provinces indicate that this interest in language laboratories is not confined to Alberta alone.

It should not be necessary to point out that the diffusion of this innovation is resulting in considerable expenditure by the taxpayers of Alberta and elsewhere. Is there sufficient evidence of returns from this investment to warrant additional expenditure for the further diffusion of this teaching aid?

Monod suggests the need for further research on the influence of language laboratory work on audio comprehension.¹³ In addition he suggests, ". . . that a comparison be made between students' achievement in audio-lingual skills and their achievement in written skills."¹⁴

¹²News item in the Sunday Sun (Vancouver), November 26, 1966.

¹³Pierre A. R. Monod, "A Study of the First French Audio-Comprehension Departmental Examination in Alberta" (unpublished Master's thesis, The University of Alberta, Edmonton, 1966), p. 56.

¹⁴Ibid.

Statement of hypotheses. The following hypotheses are presented for this study:

- Hypothesis 1: There are no significant differences in French language audio comprehension between broadcast mode, library mode, and non-laboratory students.
- Hypothesis 2: There are no significant differences in French language writing skills between broadcast mode, library mode, and non-laboratory students.

III. DEFINITIONS OF TERMS USED

Language laboratory. According to Hocking, a language laboratory ". . . is a complete electronic installation which provides a booth, headset, microphone, sufficient recording facilities for the teacher."¹⁵ Hayes, on the other hand, has observed more simply: "A language laboratory is a classroom or other area containing electronic and mechanical equipment designed and arranged to make foreign language instruction more effective."¹⁶ Keating, however, in his highly publicized and controversial report, stated merely:

There would seem to be at least as many varieties of language laboratories on the market today, as there are automobiles. And just as in the case of automobiles, where many differences shown by the great variety of models are certainly not of essential importance in relation to their primary function, it would seem to be only reasonable to point out, that, in terms of the application made of them, many of the differences among particular language laboratories are more apparent than real.¹⁷

¹⁵Elton Hocking, "Language Learning Today: 45 Questions and Answers," Audio-visual Instruction, IV, No. 6 (September, 1959), p. 197.

¹⁶Alfred S. Hayes, "What is a Language Laboratory?" Saturday Review, XLVI, No. 7 (February 16, 1963), p. 70.

¹⁷Raymond F. Keating, A Study of the Effectiveness of Language Laboratories, The Institute of Administrative Research, Teachers College, Columbia University, 1963, p. 22.

This description by Keating has drawn heavy criticism by

Pleasants:

It would seem that in his statistics he should have . . . supplied statistics as to the relative accomplishments of those students with recording equipment contrasted with those without recording facilities This difference cannot be superficially dismissed with a simile like "the difference shown by the great variety of models of automobiles."¹⁸

It is clear that Pleasants argues that statistical analysis of students' results will not be valid unless consideration is taken of the presence or absence of recording facilities in individual students' booths. Bearing this argument in mind, this study uses Stack's definition of language laboratory:

The language laboratory is a special classroom for teaching foreign languages. It is equipped with individual private or semi-private stalls, or booths. The booths are connected into a network of audio wiring, the nerve of which is the monitoring console. The monitoring console has a switchboard and tapedecks, making it possible to play tapes and send programs to all or any combination of booths.¹⁹

Stack states that there are two main modes of laboratory operation: the broadcast type and the library type.²⁰ Care was taken that the schools in the study were classified accurately using Stack's description.

Broadcast mode. The laboratory established on the broadcast mode has individual student booths equipped with earphones, a microphone,

¹⁸Jeanne Varney Pleasants, "The Effective Language Laboratory, What It Should and What It Should Not Be - An Evaluation of the Keating Report," Reprint from Newsletter (MLA Conference), III, No. 1 (November, 1963), p. 10.

¹⁹Edward M. Stack, The Language Laboratory and Modern Language Teaching (New York: Oxford University Press, 1960), p. 48.

²⁰Ibid., p. 49.

and switches for program selection. There is usually not a recording instrument at the booth but there may be provision for recording the students' performance remotely.

Library mode. The laboratory equipped for operation in the library mode can do everything the broadcast mode can do. In addition there is a tape, or disk, recorder at each booth position. The drills, instead of being broadcast, are pre-recorded on tape or disk and are not thereafter erasable by the students. As students hear the drills, they record their own responses. They are free to stop at any moment, backtrack, compare their responses with the correct answers in the anticipation drill, and make a new attempt.

Thus students may work and rework drills at their own speed, according to their own abilities. They may go over and over a difficult section until they feel they have become proficient -- such repetition is not possible in the broadcast mode. Thus wide-ranging abilities are said to be taken into account.

Lado makes the same type of classification:

A major difference in labs involves having or not having tape recorders in each booth. When the lesson is piped in from a central console, we have a broadcast type of lab. When the student has his own lesson in the booth, we have a library type of installation.²¹

Broadcast mode student. This is a student who has received instruction with the aid of the broadcast mode type of laboratory.

²¹Robert Lado, Language Teaching: A Scientific Approach (New York: McGraw-Hill, Inc., 1964), p. 188.

Library mode student. This is a student who has received instruction with the aid of the library mode type of laboratory.

Non-laboratory student. This is a student who has been taught without access to a language laboratory.

Language laboratory student. This is a student who has received instruction with the aid of a language laboratory.

Target language. The language being taught or learned is defined as a target language. This term is often preferable to Foreign language because the language being taught or learned may not be a foreign one. It may be less ambiguous than Second language because the target language may be the third or fourth language for a particular student.²²

Audio comprehension. This is the ability to understand the target language when it is spoken with normal native speed and pronunciation. In this study this will mean the information tested by the 1966 French 30 Departmental Audio Comprehension Examination.

Writing skills. This is the ability to write the target language correctly, both grammatically and orthographically. In this study this will refer to the information tested by the 1966 French 30 Departmental Examination.

²²Ibid., p. 221.

IV. DELIMITATIONS

Programs in French language instruction are more numerous in Alberta than programs in any other target language. French was therefore chosen as the target language in this study.

Since schools with five or fewer teachers did not have language laboratories, no schools of this size were included in the sample. Also schools in known predominantly French communities were omitted as it was felt that these communities might introduce a variable to the study which might be difficult or impossible to control. Moreover, it was found that there were no language laboratories in the schools of these communities.

In testing the hypotheses schools having language laboratory installations which were not being used for French 30 language instruction, were excluded.

V. ASSUMPTIONS

It is assumed that:

1. The instruments used in this study are valid measures of aural comprehension and written skills of the French language.
2. Students with varying aptitudes for French language learning are randomly distributed in the samples used in testing the hypotheses of this study.

VI. LIMITATIONS

The evaluation of the effectiveness of language laboratories in no way pretends to be exhaustive in this study for it can be argued

that the potential of the language laboratory is not being fully reached by Alberta teachers, since no provision was made to include factors such as how the laboratory was used or whether teachers using the laboratory had had training in methods of its use. Rather, an attempt was made to assess the effect of language laboratories on French language instruction as these laboratories are presently being used in the secondary schools of Alberta. Thus the study attempts to measure what "is" and does not attempt to measure what "might be." This, then, restricts the extent to which generalizations may be made from the results of this evaluation.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter is divided into two major sections, as follows:

Section I presents literature related to the purposes of the language laboratory and presents claims made by some of its proponents as well as some doubts or reservations by others.

Section II reviews related studies on the effectiveness of language laboratories.

I. PURPOSES OF THE LANGUAGE LABORATORY

It seems quite evident that the use of audio tools would not be necessary if the students lived in the target language environment and had unlimited access to native speakers of the language. Moreover, if the student were to have a tutor or drill master working individually with him throughout his study time it is unlikely that audio tools would be of benefit. Under classroom conditions, however, neither of these two nearly ideal situations exist.

Proponents of the language laboratory claim that the influence of the teacher or native speaker is extended almost indefinitely by this audio tool and thus conditions approach the ideal outlined above. Stack claims: "The language laboratory keeps a full class of students working and learning for the entire period."¹ He also states that

¹Edward M. Stack, The Language Laboratory and Modern Language Teaching (New York: Oxford University Press, 1960), p. 48.

"Each student works in private as though he had a patient, unerring, unhesitating private tutor that never tires of repeating."² The head of a university language department wrote:

This is truly a new dimension in foreign language learning, a Copernican step forward in quality. Combined with the 25 to 1 ratio of increase in quantity of oral practice, the improvement is spectacular.³

In one of the better statements that could be found by the writer, Hayes, a representative of Electronic Industries Association of Washington, D. C., claims the following specific advantages provided by the language laboratory:

1. In a language laboratory all students present can practice aloud simultaneously, yet individually. In a class of 30 students, 29 are not idle while one is busy.
2. The teacher is free to focus his attention on the individual student's performance without interrupting the work of the group.
3. Certain language laboratory facilities can provide for differences in learning rates.
4. The language laboratory provides authentic, consistent, untiring models of speech for imitation and drill.
5. The use of headphones gives a sense of isolation, intimate contact with the language, equal clarity of sound to all students, and facilitates complete concentration.
6. Recordings provide many native voices. Without such variety it is common for students to be able to understand only the teacher.
7. The language laboratory facilitates testing of each student for listening comprehension. It is impracticable for the unaided teacher to test this skill.
8. The language laboratory facilitates testing of each student for speaking ability. It has been impracticable for the unaided teacher to test this skill.
9. Some teachers, for reasons beyond their control, do not themselves have sufficient preparation in understanding and speaking the foreign language. The language laboratory provides these teachers with an opportunity to improve their own proficiency.

²Ibid.

³Elton Hocking, "The Language Laboratory," College and University Business (June, 1957), p. 54.

10. The language laboratory makes it possible to divide a class into teacher-directed and machine-directed groups.

11. Certain language laboratory facilities can enhance the student's potential for evaluating his own performance.

12. Given specifically-designed instructional materials, the language laboratory can provide technical facilities for efficient self-instruction.⁴

Hutchinson states that the language laboratory is at its weakest when it is expected to fulfill requirements other than its basic function of helping to develop and maintain the listening and speaking skills.⁵ That is, laboratory use for the traditional grammar-translation type of program is not one of its strong features. We should not expect the language laboratory, then, to be of much help for the teaching of the conventional writing skills of French language study.

Hayes makes the statement that, ". . . understanding and speaking are to a large extent matters of habit, rather than matters of knowledge."⁶ He reasons that the only known way to form habits is through practice and that learning a language is in this respect much like learning to play a musical instrument. No one questions that the musician must practice, if he wants to learn to play. He illustrates by stating that if anyone wants to learn to play the piano no amount of study of musical notation alone will teach him to play the instrument. Yet, he argues, ". . . failure to make satisfactory progress in a foreign language has been traditionally attributed to insufficient study rather than

⁴Alfred S. Hayes, Language Laboratory Facilities, U.S. Department of Health, Education, and Welfare, Office of Education (Washington: Government Printing Office, 1963), pp. 16-17.

⁵Joseph C. Hutchinson, Modern Foreign Languages in High School: The Language Laboratory, Bulletin 1961, No. 23 United States Department of Health, Education, and Welfare, Office of Education (Washington: Government Printing Office, 1961), p. 9.

⁶Hayes, op. cit., p. 15.

to the real cause, insufficient practice."⁷ He concludes his argument by stating:

Practice, then, is essential to understanding and speaking a foreign language But it is difficult, often exhausting, for a live teacher to provide, through countless repetitions, the consistently authentic model and the carefully sequenced progression of drills which efficient practice requires. To provide this practice is the fundamental role of the language laboratory.⁸

Carroll points out that the contemporary doctrines stress the need for overlearning of language patterns by a special type of drill known as "pattern practice." He explains this term in the following:

Pattern practice gives drill in the conscious application, variation, and transformation of structural patterns of language, with a view toward making such patterns "automatically" accessible in actual use of the language. These procedures are justified on the basis of theories and observations as to how children learn their native language and how the individual functions in using the well-practiced patterns of his native language.⁹

Hocking, however, questions the above notions:

When language is defined as a matter of sound waves, language practice becomes merely a matter of producing and receiving the appropriate sound waves, hence oral-aural drill, and drill, and more drill. Presumably, the Skinnerian reward of "confirmation" provides adequate motivation for all learners. Presumably, also, the relentless drilling of two motor skills, oral and aural, is preferable to the more complex activities which normally provide the context and referents for human speech.

Much research, basic and applied, needs to be done in this connection. There are probably more variables than we realize, for speech is thoroughly rooted in other aspects of human behavior.¹⁰

⁷Ibid.

⁸Ibid., p. 16.

⁹John B. Carroll, "Research on Teaching Foreign Languages," Handbook of Research on Teaching, N. L. Gage, editor (New York: Rand McNally and Company, 1963), pp. 1063-64.

¹⁰Elton Hocking, Language Laboratory and Language Learning, Monograph No. 2, Department of Audio-visual Instruction, National Education Association of the United States (Washington: Government Printing Office, 1964), pp. 57-58.

Pimsleur, citing needed research, raises further questions such as the following: Does pattern practice "go in one ear and out the other" because the responses do not spring from actual felt needs of the students?¹¹ That is, may not the classroom with the motivating effect of face-to-face dialogue give more meaning to pattern drills than the experience of the student in a laboratory booth "conversing" with a machine?

Pimsleur also advances the untested hypothesis that a given amount of time spent in choral drill is more productive than the same amount of time spent in individual drill.¹² He asks the question: "How well does material learned in one modality transfer to another, with particular attention to the problem of aural versus visual learning in language?"¹³ That is, he makes the point that while language laboratories usually make use of the sense of hearing only, the good teacher in the classroom may use the aural, the visual, and the motor activities as the student acts out, for example, the following: "Je vais au tableau noir, j'écris un mot."

This section has looked at statements made by proponents of the language laboratory and also at statements by others who have some reservations about its effectiveness. Although made by authorities in the field of language instruction, many of these are merely opinions

¹¹Paul Pimsleur, Report of the NDEA Conference on Psychological Experiments Related to Second Language Learning, Los Angeles, December, 1959, p. 3.

¹²Ibid., p. 25.

¹³Ibid., p. 3.

on the effectiveness of the language laboratory for language instruction. The next section reviews a number of studies that have been done on the topic.

II. RESEARCH ON LANGUAGE LABORATORY EFFECTIVENESS

A sample of five thousand students of French in twenty-one school districts near New York City were tested in a study by Keating for three language skills: reading comprehension, listening comprehension, and speech production. The total number of students was distributed among two groups, a language laboratory group and a no-laboratory group each at four levels of experience, that is, years of French instruction. Keating found that in only one instance, that of speech production scores at level 1, was there found a significant difference that favored the language laboratory group. Significant differences that favored the no-laboratory group predominated and appeared in connection with each language skill tested.¹⁴ Keating stated that his study did not purport to demonstrate that the language laboratory could not be used effectively, but concluded that in the schools of the Metropolitan School Study Council, better results in certain important skill areas were being achieved in instructional situations which did not use the language laboratory.¹⁵

A faculty group at Antioch College conducted a two-year experiment comparing instruction organized in the conventional way with

¹⁴Raymond F. Keating, A Study of the Effectiveness of Language Laboratories (New York: The Institute of Administrative Research, 1963), p. 39.

¹⁵Ibid.

instruction organized around a language laboratory. In each of two separate years comparisons revealed generally nonsignificant differences between the two groups in end-of-year achievement.¹⁶

Peters compared two small groups of French students and unexpectedly found that the control group surpassed the group which attended the language laboratory. The groups were tested at the end of their beginning year on grammatical skills and speech production. Peters suggested that the laboratory was inadequately handled.¹⁷

Carrol, et al, made a comparison between a high school class which had the benefit of a language laboratory and another which did not. Intelligence test scores and scores on a language aptitude test were used as control variables. No significant differences were found between the classes in auditory comprehension skills, and the class trained with the aid of the language laboratory did significantly poorer on tests of reading, vocabulary, and grammar. Although they found no differences the authors cast no doubt on the utility of the language laboratory. They did point out however the need to strengthen language laboratory instruction.¹⁸

Lorge, from a study of 713 secondary school students, reported

¹⁶Antioch College, Experiment in French Language Instruction; Second Report (Yellow Springs, Ohio: Antioch College, 1960).

¹⁷Mary Olga Peters, "Report of an Experiment in the Teaching of Beginners' French," Teachers College Journal, XXII (November, 1950), p. 26.

¹⁸J. B. Carroll, et al, Annual Report, Committee on Foreign Languages (Cambridge, Mass.: Graduate School of Education, Harvard University, 1959).

that students using the language laboratory learned French without detriment to the traditional skills of reading and writing, and that listening comprehension was not improved by the language laboratory. However, she reported, the use of the language laboratory resulted in definite gains in students' speaking competency and students' interest in French.¹⁹

The above studies present rather negative findings regarding the effectiveness of language laboratory use. The Keating study caused some controversy because of the publicity that it received and because it carried much influence due to the fact that it was a government-financed project. Keating also made statements such as, ". . . the language boom might well turn into a crash and national scandal."²⁰ when referring to the large amount of money spent for language laboratories. Numerous articles have been written attempting to refute his findings. Pleasants, pointing out deficiencies of the Keating study, stated that Keating did not sufficiently take into account type of laboratory, that he used scores from various intelligence tests rather than having them all scored on the same one, and that, he did not describe the method of sampling used.²¹

Several studies have shown results favoring language laboratory

¹⁹Sarah W. Lorge, "Report of Study on Foreign Language Laboratories in Secondary Schools," Audio-visual Communication Review, XI (May-June, 1963), p. 70.

²⁰Keating, op. cit., p. 7.

²¹Jeanne Varney Pleasants, "The Effective Language Laboratory, What It Should and What It Should Not Be - An Evaluation of the Keating Report," Reprint from Newsletter (MLA Conference), III, No. 1 (November, 1963), p. 10.

use. These studies therefore present evidence which conflicts with that cited above. Allen divided fifty-four French and Spanish pupils into two groups of equal ability. The experimental group spent twenty per cent of class time during the year in the laboratory. End-of-year tests showed that the experimental group achieved higher scores in reading, vocabulary, and grammar.²²

Bernard and Lorge made a study of comparative gains made by groups of students using two types of language laboratory equipment in each of two time patterns.²³ The two types of equipment used were audio-active (non-recording) and recording-playback; and the time patterns were one laboratory session per week, and twenty-minutes-daily laboratory sessions. The four laboratory groups were compared with each other and also with a group of classes using no electronic equipment. Seventeen classes in second-year French in ten New York City high schools were the experimental population. In comprehension of rapidly spoken French the greatest gains were made by the recording-playback-twenty-minutes-daily group. This same group also made greatest gains in total performance on the standardized test of conventional skills, outranking the no-electronic-equipment group and the other laboratory groups. Bernard and Lorge concluded that type of equipment

²²Edward David Allen, "The Effects of the Language Laboratory on the Development of Skill in a Foreign Language," Modern Language Journal, XLIV (December, 1960), pp. 355-358.

²³Edward B. Bernard and Sarah W. Lorge, "The Relative Effectiveness of Four Types of Language Laboratory Experience," Research supported in part by the New York State Education Department, 1962-63.

and amount of use both have an important influence on what is accomplished in language laboratory work.

Mueller and Wiersma report that the listening, repeating without recording, type of laboratory produced the highest mean scores on audio comprehension of the French language compared to other laboratory types.²⁴ Bauer, comparing classes taught with and without audio aids, reports that audio aids bring twenty to thirty per cent increase in mechanics of expression, vocabulary and grammar, and as much as fifty per cent in oral work. He cautions, however, that unless they are carefully prepared and integrated, audio aids can produce negative results.²⁵

III. SUMMARY

The following paragraph summarizes briefly the studies cited in this chapter.

Keating and Peters report that language laboratory students were significantly poorer than non-laboratory students; Carroll, Lorge, and the group at Antioch College report no significant differences between laboratory and non-laboratory groups; Bernard and Lorge, and Bauer report significantly higher test scores on audio comprehension by laboratory groups compared with non-laboratory groups. On tests of

²⁴Klaus A. Mueller and William Wiersma, "The Effects of Language Laboratory Type Upon Foreign Language Achievement Scores," The Modern Language Journal, LI, No. 6 (October, 1967), pp. 349-351.

²⁵Eric Wolfgang Bauer, "An Experimental Study of the Achievement in Learning a Foreign Language through Comparison of Classes Taught with and without Audio-Aids of the Language Laboratory," Unpublished Master's Thesis, DePauw University, 1959.

written skills Keating, Peters, and Carroll report that laboratory students were significantly poorer; Lorge and the Antioch group report no significant differences; and Allen, Bernard and Lorge, and Bauer report higher achievement.

Some of the studies favoring laboratory instruction have been cited as well as some studies favoring non-laboratory instruction. One can conclude from reviewing the literature on this subject that there is conflicting evidence regarding the effectiveness of language laboratory use.

It is clear, then, that persons having to decide whether to adopt language laboratories for their school or district have no easy decision to make. Further research is needed. Hocking supports this view in his statement that, "What language laboratories most need today is more research and fewer flashing lights."²⁶

²⁶Hocking, op. cit., p. 29.

CHAPTER III

METHOD OF COLLECTION AND TREATMENT OF DATA

I. THE PRELIMINARY SURVEY

In order to determine the number of language laboratories in the province of Alberta and the location of these laboratories a one-page survey questionnaire was sent to all school superintendents in the province. (See Appendix A.) These included superintendents of divisions, counties, and city districts. The questionnaire also attempted to discern, for those areas not having language laboratories, if school boards had considered at some time in the past the installation of language laboratories in their schools and further asked if there were plans for installation within the next year. The purpose of this section of the questionnaire was to find out if school boards had been faced with the decision to adopt or not to adopt this innovation. Superintendents in areas having language laboratories were further asked to supply the date of installation, the subject fields in which the laboratories were being used, and whether the laboratory had record and playback facilities. Space was also provided in the questionnaire for the superintendent to make any other pertinent comments.

All superintendents completed and returned the questionnaire.

II. THE SAMPLE

Two high schools, one a library mode school and the other a non-laboratory school, were selected for the depth part of the study. Both were situated in the same large metropolitan area, both were in the

same school system, and both appeared like one another with the notable exception that one used a language laboratory in French instruction whereas the other did not. These schools were chosen to supply additional information that would be difficult to obtain for the entire sample.

All high schools having a language laboratory installed earlier than 1966, except those in the two largest metropolitan areas of the province, were included in the sample. From a Department of Education list of operating high schools in the province a stratified random sample of non-laboratory schools was made up. This sample included only those schools which met the conditions set down a priori for participation in the study. The conditions were: that the school have six or more high school teachers, and that it not be located in a known predominantly French community. Three stratifications were made in the non-laboratory schools thus: first, six to twelve teachers inclusively; second, thirteen to twenty-four teachers inclusively; and third, twenty-five or more teachers. A random selection of five non-laboratory schools out of a potential of 117 was made from the first stratification and eight from the second out of a potential of twenty-eight using the method described by Gourevitch.¹ These numbers were chosen because of a like number of either library mode or broadcast mode schools of this size in the province. There were six non-laboratory schools and six library mode schools in the third stratification and so all six of these non-laboratory schools were included in the sample.

The resulting sample for the study is shown in Table I.

¹Vivian Gourevitch, Statistical Methods: A Problem-Solving Approach (Boston: Allyn and Bacon, Inc., 1965), pp. 69-70.

TABLE I

DISTRIBUTION OF THE SAMPLE BY SCHOOL SIZE
AND LANGUAGE LABORATORY EQUIPMENT

School size	Library mode Schools	Broadcast mode Schools	Non-lab. schools	Totals
6 - 12	4	5	5	14
13 - 24	8	3	8	19
25 or more	6	2	6	14
Metropolitan schools	1		1	2
Totals	19	10	20	49

III. COLLECTION OF DATA

Raw scores from the French 30 Audio Comprehension Examination, the French 30 Departmental written test, and the SCAT (Cooperative School and College Ability Test) test written by Alberta Grade XII students in June, 1966 were compiled for those students attending the schools included in the sample. These scores were obtained from the Examinations Branch, Department of Education, Edmonton. Because aural comprehension scores and written test scores are not kept separately it was found necessary to go to the individual student answer booklet for this information.

Additional information needed for the analyses was obtained in the following way. For the schools in the sample all French 30 teachers were asked to complete a questionnaire which asked questions related to the amount and type of teaching experience, university training in the field of French, teaching preference, and a self-rating of fluency in speaking French. (See Appendix B.) If the school was equipped with a language laboratory the teacher was to state the average amount of time per week that the language laboratory was used in instructing French 30 students. Care was taken to ensure that the information used in this part of the study was obtained from the teacher who actually taught the students writing the June, 1966 examinations. Where the teacher, replying to the questionnaire reported that he was not the one who taught French 30 during the 1965 - 1966 term a follow-up letter was sent to the principal of the school requesting the name and address of that teacher. The teacher thus identified was then contacted directly. In schools in which more than one teacher instructed in the French 30 course care was

taken to match teacher characteristics with the students actually instructed by him.

Two of the teachers in the original forty-nine schools in the sample could not be reached. It was also found that there were no French 30 students in two of the schools that were contacted. In eight of the language laboratory schools that comprised the original sample the language laboratory was not used for French instruction. The students from these schools were therefore omitted from the major analyses. Complete data were thus obtained for thirty-seven schools as shown in Table II.

The resulting total student sample was as shown in Table III.

For the depth part of this study, that is, for the two schools from the metropolitan area, certain additional data were needed. The source of these data was the Pupil's Cumulative Record, Form 308-1, approved for use in Alberta schools by the Department of Education. The sex of the student, the lineage, the occupation of the student's parents, and the years of French study were obtained.

IV. TREATMENT OF DATA

All data were recorded in matrix form with separate observations for each student. These data were then transferred to IBM cards and all computations and testing of hypotheses were done by computer. The criteria were the raw scores on the Departmental French 30 Audio Comprehension Examination, the French 30 Departmental Examination on written skills. The SCAT scores, the size of school, the teacher data, and in the depth study the additional pupil data were used as control and predictor variables. To facilitate regression analysis categories

TABLE II

SUMMARY OF SCHOOLS IN THE SAMPLE BY LABORATORY TYPE

	Library mode schools	Broadcast mode schools	Non-lab. schools	Totals
Original sample	19	10	20	49
Questionnaires not returned		1	1	2
	19	9	19	47
No French 30 students			2	2
	19	9	17	45
Laboratory not used for French 30 instruction	5	3		8
Usable sample	14	6	17	37

TABLE III

TOTAL STUDENT SAMPLE BY LABORATORY TYPE

	Number of students
Library mode students	465 ^a
Broadcast mode students	130
Non-laboratory students	576 ^b
Total	1171
Students from laboratory schools where laboratory was not used	241 ^c
	1412

^aIncluded in this number are seventy students used in the depth part of the study.

^bIncluded in this number are seventy students used in the depth part of the study.

^cThese students were used only in calculating the correlation between aural and written test scores.

were set up. Blishen's Occupational Class Scale was applied to the parent's occupation to obtain a measure of the socio-economic background of the pupil.²

Tests were done separately on the audio comprehension scores and on the written scores. The five per cent level of confidence was set a priori as the critical level for acceptance or rejection of the null hypotheses. Wherever significant differences beyond the .01 level occurred these were noted.

V. DESCRIPTION OF THE SAMPLE

Before examining any finding it is necessary to question whether by chance one of the groups in the sample might have been superior to the others in some way. Thus the groups were examined for possible differences in general ability, that is in SCAT scores; in opportunity to learn, that is, they were compared for school size, for teacher variables, namely, years of teaching experience, years of teaching French, French university courses taken by the teacher, and the self-fluency rating by the teacher. Mean scores of the three groups, library mode students, broadcast mode students, and non-laboratory students, were compared for all variables included in the study. The analysis of variance program that was used in doing this is described by Winer³ and

²Bernard R. Blishen, "The Construction and Use of an Occupational Class Scale" in Bernard R. Blishen, Frank E. Jones, Kaspar N. Naegle, John Porter (eds.), Canadian Society - Sociological Perspectives (Toronto: MacMillan of Canada Limited, 1964), pp. 453-457.

³B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company Inc., 1962), pp. 86, 101.

provides for a Newman-Keuls comparison between ordered means.

Results of tests of differences between SCAT score means of library mode, broadcast mode, and non-laboratory students are shown on Table IV. The difference between the means of the three groups was found to be statistically not significant. The order of the means of the groups were as follows: first, and highest, library mode group; second, non-laboratory group; third, and lowest, broadcast mode group.

Although the three groups are somewhat similar in ability what of the opportunity to learn? It is perhaps held to be true that size of school has a bearing on achievement, and that the larger the school the better the facilities, and the better the teaching.

Table V compares the three groups on number of teachers employed in the school which is the measure of school size used in the present study. The means of the three groups of students did differ statistically on this variable. These differences as shown in Table V are all significant at the .01 level of confidence. It is evident from an examination of the results that library mode instruction tends to be found in the larger schools. The reason for this may be largely economic because the equipment in a library mode laboratory is more expensive than is the broadcast mode type. School boards may feel justified in making the extra expenditure for such equipment only when a large number of students can be served. The broadcast mode students in the sample were found in the smallest schools. School administrators have gone to considerable expense to provide laboratory equipment in these schools in relation to the number of students served by this teaching aid.

Based on the finding that library mode students in the present study were more frequently found in the larger schools than were students

TABLE IV

RESULTS OF TESTS OF DIFFERENCES BETWEEN SCAT SCORE MEANS OF
LIBRARY MODE, BROADCAST MODE, AND NON-LABORATORY STUDENTS

(N = 1171)

Groups ^a		1	3	2
	Means ^b	80.521	79.903	77.431
2	77.431	3.091 ^c	2.472 ^c	
3	79.903	0.619 ^c		
1	80.521			
The multiplier is 1.49954				

^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 0.83 Significance NS

^cNot significant

TABLE V

RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS
ON SIZE OF SCHOOL ATTENDED
(N = 1171)

Groups ^a		1	3	2
	Means ^b	39.358	29.484	15.992
2	15.992	23.366 ^c	13.492 ^c	
3	29.484	9.874 ^c		
1	39.358			
The multiplier is 1.05964				

^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 106.83 Significance: .01

^cSignificant at .01

in the other two groups, and if there are better opportunities for students in the larger schools, then one would expect the library mode students to have a decided advantage over the non-laboratory and broadcast mode students in the sample of this study.

It is generally thought that certain variables are related to student achievement. One teacher variable which may be related to student success in school and more specifically to achievement in French is the number of years of teaching experience. Accordingly four teacher categories were set up as follows to assist in testing for the effects of teaching experience as follows:

Category 1 four years or less of experience

Category 2 five to nine years of experience

Category 3 ten to fourteen years of experience

Category 4 fifteen years or more of experience

Table VI presents the means for the three groups of French language students by length of teaching experience using the above categories. The differences between the means of groups one and two are found to be significant at the .01 level as are the differences between means of groups one and three. Groups two and three are not significantly different on this teacher characteristic. While there is a statistical difference between means in two of the three comparisons, the overall effect on student achievement reflected by this difference may not be great. The lowest mean shown in Table VI is that of the library mode group. This mean of 2.258 indicates that teachers of the library mode students had from five to nine years of teaching experience. Whether there indeed are significant differences in the behavior of teachers which have implications for student achievement between teachers

TABLE VI
RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS ON
LENGTH OF THEIR TEACHER'S TEACHING EXPERIENCE

(N = 1171)

Groups ^a		2	3	1
	Means ^b	3.208 ^e	3.132	2.258
1	2.258	0.950 ^d	0.874 ^d	
3	3.132	0.076 ^c		
2	3.208			
The multiplier is 0.07802				

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 70.40 Significance: .01

^cNot significant

^dSignificant at .01

^eThese are means of categories which represent the following:

- 1 4 years or less
- 2 5 to 9 years
- 3 10 to 14 years
- 4 15 years or more

who have five to nine years of teaching experience and those who have over nine years of experience is perhaps a matter of conjecture. The greatest difference in impact, if any, is probably between novice and experienced teachers.

While a teacher may have had a number of years of teaching experience some of this experience may have been in fields other than French. One may question the relevance of extensive experience outside the field of French language instruction to the teaching of French. For this reason teachers were asked to supply information regarding the number of years they had actually taught French. Table VII compares the groups of French language students on the average number of years of experience their teacher had in teaching French. Significant differences were found in means between groups one and three and between groups two and three. It seems quite apparent that the non-laboratory group were taught by teachers having significantly more years of experience teaching French. One may speculate as to whether language laboratories are purchased where there is a shortage of experienced French teachers or whether the more experienced French teachers avoid teaching in schools where there is this teaching aid. It may be that the younger and more innovative language teachers are the ones pressing for adoption of language laboratories in their schools.

Since academic training of the teacher may bear a relationship to student achievement in French this variable was also examined. Table VIII compares the three groups of students on the average number of French university courses taken by their teacher. The differences between the means were found to be statistically not significant. The groups, then, had little advantage over each other on this variable.

TABLE VII

RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE, BROADCAST
MODE, AND NON-LABORATORY STUDENTS ON LENGTH OF THEIR TEACHER'S
EXPERIENCE TEACHING FRENCH

(N = 1171)

Groups ^a		3	2	1
	Means ^b	11.201	8.777	8.775
1	8.775	2.427 ^d	0.002 ^c	
2	8.777	2.424 ^d		
3	11.201			
The multiplier is 0.38304				

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 22.67 Significance: .01

^cNot significant

^dSignificant at .01

TABLE VIII

RESULTS OF TESTS OF DIFFERENCE BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS ON
NUMBER OF FRENCH COURSES TAKEN AT UNIVERSITY
BY THEIR TEACHER

(N = 1171)

Groups ^a		3	1	2
	Means ^b	5.370	5.092	5.077
2	5.077	0.293 ^c	0.015 ^c	
1	5.092	0.278 ^c		
3	5.370			
The multiplier is 0.15137				

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 1.95 Significance: NS

^cNot significant

The teachers in the sample were asked to rate themselves as to fluency in speaking French. They were asked to indicate whether they were completely fluent, moderately fluent, lacking in fluency, or whether they did not speak French. These responses were categorized as follows: the response category of "completely fluent" was given a value of one; on the other hand, the response category of "do not speak French" was given a value of four. Table IX compares the means for the three French language groups of students on the average number representing fluency by their teacher. From the table one notes that teachers of all three groups of students on the whole considered themselves to be "completely fluent" or "moderately fluent." Table IX also reveals that there were significant differences at the .01 level of confidence between all three groups. Teachers in library mode schools considered themselves to be the most fluent and teachers in broadcast mode schools felt that they were least fluent in French.

Summary of tests run on variables. The groups in the sample were examined to see if either held an advantage in some way over the others. In comparing SCAT scores it was found that the groups were quite similar. In comparing opportunity to learn, library mode students were found in significantly larger schools but had teachers who had significantly fewer years of total teaching experience, and who had significantly fewer years of teaching French than did teachers of the non-laboratory students. Broadcast mode students were found in schools that were significantly smaller than those of non-laboratory students and had teachers with significantly fewer years of experience teaching French than did the teachers of non-laboratory students. Library mode students were found in schools that were significantly larger than those of

TABLE IX
RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS ON
FLUENCY OF THEIR TEACHER

(N = 1171)

Groups ^a		2	3	1
	Means ^b	2.085 ^d	1.863	1.620
1	1.620	0.464 ^c	0.243 ^c	
3	1.863	0.222 ^c		
2	2.085			
The multiplier is 0.03723				

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 38.66 Significance: .01

^cNot significant

^dThese are means of categories which represent the following:
1 completely fluent
2 moderately fluent
3 lacking in fluency
4 do not speak French

broadcast mode students and had teachers with significantly more total years of teaching experience than did the teachers of broadcast mode students. Significant differences were also found between all groups on the variable fluency rating of teachers. The broadcast mode group had teachers who rated themselves as being more fluent than did the teachers of the non-laboratory and the library mode group. Teachers of the library mode group rated themselves lowest on this variable.

Because it was found, as shown above, that the groups were not the same in every respect it became clear that it was necessary to use a statistical procedure which would control for these differences. For this reason a General Regression Program was used in the hypothesis testing. Findings of this analysis are presented in Chapter IV.

CHAPTER IV

A COMPARISON OF ACHIEVEMENT IN AUDIO COMPREHENSION

I. TESTING OF HYPOTHESIS 1

In Chapter I the hypotheses for this study were stated. A review of the literature, summarized in Chapter II, revealed no consistent evidence in support of laboratory use in language instruction. This chapter reports and discusses the findings of the tests of the first hypothesis.

Hypothesis 1: There are no significant differences in French language audio comprehension between broadcast mode, library mode, and non-laboratory students.

Findings. The 1171 students were arranged for analysis into three groups as follows:

- Group 1 - Library mode students
- Group 2 - Broadcast mode students
- Group 3 - Non-laboratory students

An analysis of variance program was run to provide a comparison between means for the three groups on the test of audio comprehension. This program described by Winer¹ provides for a Newman-Keuls Comparison Between Ordered Means. Table X presents results of tests of differences between the groups on their audio comprehension means. The analysis of variance reveals that there were differences among the library mode, broadcast mode, and non-laboratory students significant at the .05 level. When the means were ordered, non-laboratory students achieved the highest average score and broadcast mode students achieved the lowest score among

¹B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company Inc., 1962), pp. 86, 101.

TABLE X

RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS
ON AUDIO COMPREHENSION

(N = 1171)

Groups ^a		3	1	2
	Means ^b	23.875	23.090	22.915
2	22.915	0.960 ^c	0.175 ^c	
1	23.090	0.785 ^c		
3	23.875			
The multiplier is 0.32401				

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 3.70; Significance: .05

^cNot significant

the three groups. Comparison of these two at a time using the Newman-Keuls test² revealed however that none of the differences between pairs of means were significant.

Discussion. The finding that there are no significant differences on audio comprehension is in agreement with Carroll, Lorge, and the group at Antioch College whose research was summarized earlier in this study.³ However, this finding is not in agreement with Keating and Peters who report that language laboratory students were significantly poorer on measures of audio comprehension, nor does it agree with the findings of Bernard and Lorge, Buch, and Bauer who report significantly higher test scores by language laboratory students on audio comprehension.⁴

Although the F ratio of 3.70 reported in Table X suggests that there may be a difference between the groups on the test of audio comprehension the absolute difference between the means was not even 1.0 out of a total possible score of 50. The very least that might be said about these results is that there is no clear indication that language laboratory students achieve higher scores on tests of audio comprehension. Indeed, if anything, indications appear to be that the reverse of this may be true.

In order to control some of the contaminating variables which may have in part accounted for the audio comprehension scores a further analysis was undertaken using Stepwise Regression.

²Ibid., p. 648.

³Supra, p.21.

⁴Supra, p.21.

II. REGRESSION ANALYSIS

A Stepwise Regression Program was run on the Audio Comprehension scores of the three categories of French language students. The purpose of this analysis was to determine which variables accounted for the variance in achievement on audio comprehension. The number of students included in this analysis was 1031 and not 1171, the number in the entire sample, because a separate regression analysis was run on 140 students chosen for in depth study. This in depth analysis is reported later in the present chapter. The findings of the first of these two regression analyses are reported in Table XI.

Findings. It was found in the regression analysis that equipment type accounted for 0.01 per cent of the variance in audio comprehension test scores. As shown in the table the contribution of equipment type to the variance in audio comprehension scores of French language students was found to be statistically not significant.

The greatest percentage of variance was accounted for by the students' SCAT scores. This was found to be significant at the .01 level. Also significant at the .01 level were the variables: French university courses taken by teacher accounting for 2.46 per cent of the variance, years that the teacher had spent teaching French accounting for 0.86 per cent of the variance, length of the teacher's total teaching experience accounting for 0.69 per cent of the variance. The remaining variables, none of which were statistically significant, had the following order of entry: fluency rating, school size, equipment type, minutes per week of laboratory use. The total variance accounted for was 7.77 per cent.

TABLE XI
RESULTS OF REGRESSION ANALYSIS OF THE AUDIO COMPREHENSION
SCORES OF THE ENTIRE SAMPLE
(N = 1031)

Order of entry in regression analysis	Variable name	Per cent of variance accounted for	Significance
1	Student's SCAT score	3.46	.01
2	Number of French university courses taken by student's teacher	2.46	.01
3	Length of his teacher's experience teaching French	0.86	.01
4	Length of teacher's total teaching experience	0.69	.01
5	Teacher's fluency rating	0.17	NS
6	School size	0.11	NS
7	Equipment type	0.01	NS
8	Minutes per week of laboratory use	0.00	
Total variance accounted for		7.77	

Discussion. While the regression analysis of the audio comprehension scores was disappointing from the point of view of total percentage of variance explained by the variables in the present study, this analysis appears to confirm the preliminary generalizations based on the analysis of variance and Newman-Keuls tests reported earlier. The use of language laboratory equipment has no significant effect upon audio comprehension scores of French language students.

Of considerable importance to administrators and educators is the finding that achievement in audio comprehension is more highly associated with the training and experience of the teacher than with the use of language laboratory equipment.

III. DEPTH STUDY OF TWO METROPOLITAN SCHOOLS

Additional pupil information namely, the pupil's sex, lineage, parent's occupation, and level of French study, was obtained for 140 French 30 students attending two large metropolitan schools. One of these schools made use of a library mode laboratory and the other school was a non-laboratory school. The purpose of the in depth study was to determine if there were additional variables, difficult to include for the larger sample of students, that contributed significantly to achievement in audio comprehension. Obtaining the student variables, included only in the depth study, involved going to each student's Cumulative Record Card.

The student variable sex was not included in the larger sample because some students use only initials to identify first names and others have names which are used by either sex. It was also difficult to categorize by sex students with East European or Asian names. The sex

of the student is readily available from the cumulative records. This variable was therefore included in the depth part of the study.

Because it is generally held that achievement in French is affected by the student's lineage this variable was also included in the depth study. The information sought and recorded for each student was whether neither of his parents were French, one of his parents was French, or both of his parents were French.

The socio-economic rating for each student in the depth study was also determined. This was done by taking the parents' occupation and applying Blishen's Occupational Class Scale.⁶ This procedure yielded an index of socio-economic status for every student.

Because some students had attended schools where French was offered at an earlier age it was deemed desirable to include this variable in the depth study. The Cumulative Record Cards had the complete record of each student's academic experience. From this record it was possible to determine the number of years each student in the sample had studied French.

Categories were set up to facilitate regression analysis. The results of this analysis are shown in Table XII.

Findings. The total variance accounted for by the regression analysis of the audio comprehension scores of the 140 students included in the depth study was 28.61 per cent. Lineage of the student accounted for 12.65 per cent of this variance, followed by student's SCAT scores and length of his teacher's experience teaching French each contributing 7.94 per cent and 3.95 per cent respectively. The proportion of

⁶Blishen, op. cit., pp. 453-457.

TABLE XII

RESULTS OF REGRESSION ANALYSIS OF THE AUDIO COMPREHENSION SCORES
OF TWO METROPOLITAN SCHOOLS

(N = 140)

Order of entry in regression analysis	Variable name	Per cent of variance accounted for	Significance
1	Lineage of student	12.65	.01
2	Student's SCAT score	7.94	.01
3	Length of his teacher's experience teaching French	3.95	.01
4	Socio-economic rating of student's family	1.79	.05
5	Student level of French Study	0.59	NS
6	Sex of student	0.11	NS
7	Minutes per week of laboratory use	0.33	NS
8	Number of French University courses taken by student's teacher	1.24	NS
9	Teacher's fluency rating	0.00	NS
10	Equipment type	0.00	NS
11	Length of teacher's total teaching experience	0.00	NS
12	School size	0.00	NS
Total variance accounted for		28.61	

variance accounted for by each of these variables was found to be significant at the 1 per cent level of confidence. The socio-economic rating of the pupil accounted for 1.79 per cent of the variance significant at the 5 per cent level. The remaining variables, namely level of French, sex of the student, minutes per week of laboratory use, number of French university courses taken by student's teacher, teacher's fluency rating, equipment type, length of teacher's total teaching experience, and school size together amounted for less than one and one-half per cent of the variance and none of these was significant.

Discussion. While once again a disappointingly low percentage of variance was accounted for by the variables included in this study the analysis served to confirm the earlier findings that the use of the language laboratory accounted for an insignificant amount of the variance in achievement on audio comprehension. However the depth study did add two significant variables to the findings reported in Table XI. Lineage of the student, that is, whether the student had one, two or no French parents, accounted for nearly one-half of the total variance accounted for. A positive correlation coefficient of 0.36 between lineage of the student and achievement on audio comprehension in the present study reveals that the better scores were made by students having French parents.

The variable socio-economic rating of the student was found to be significant at the 5 per cent level. It seems that the home background of the student, in particular his lineage and socio-economic rating, has a significant effect upon the achievement in audio comprehension of the French language.

IV. SUMMARY

The hypothesis that there are no significant differences in French language audio comprehension between broadcast mode, library mode, and non-laboratory students is tentatively accepted on the basis of a Newman-Keuls Comparison of Ordered Means Test which showed no significant differences between means of the three groups. Any differences that were evident appeared to favor the non-laboratory group. Comparisons between the three French language groups on several variables revealed that on nearly every variable included in the study one of the groups appeared to be significantly different from the other two. It was thus necessary to undertake an additional analysis of the data and to control statistically for these differences, before the null hypothesis could either be accepted or rejected.

Regression analyses accounted for a small percentage of the total variance in the large sample and revealed that the students' SCAT scores, French university courses taken by their teacher, the number of years their teacher had taught and their teacher's total teaching experience contributed significantly to the variance in the audio comprehension scores. In the depth study of the two metropolitan schools a greater percentage of variance (28.61 per cent) was accounted for. Lineage of the student, his SCAT score, length of his teacher's experience in teaching French, and the student's socio-economic rating contributed significantly to the variance in French language audio comprehension scores.

In both regression analyses laboratory equipment did not appear to contribute significantly to the variance in scores between the groups.

The findings in this chapter seem to indicate that administrators wishing to improve the audio comprehension of French language students would do well to concentrate their efforts on obtaining better qualified and more experienced French language teachers rather than expending a sizeable amount of money on the purchase of language laboratories for their schools.

CHAPTER V

A COMPARISON OF ACHIEVEMENT IN CONVENTIONAL WRITING SKILLS

I. TESTING OF HYPOTHESIS 2

This chapter reports and discusses findings of the tests of the second hypothesis.

Hypothesis 2: There are no significant differences in French language writing skills between broadcast mode, library mode, and non-laboratory students.

Also reported in this chapter are, the correlation between audio comprehension scores and conventional writing skills scores, a comparison of achievement to amount of laboratory use, and a comparison of total scores achieved by library mode, broadcast mode, and non-laboratory groups after a weighting formula used by the Department of Education is applied.

Findings. An analysis of variance program was run to provide a comparison between means of the three groups, namely, library mode, broadcast mode, and non-laboratory students on achievement in conventional writing skills. The means for the three groups and findings of the statistical tests are shown in Table XIII.

The highest average score was achieved by the non-laboratory group and the lowest by the library mode group. The difference between the means of the library mode and the broadcast mode groups is significant at the 5 per cent level of confidence. The difference between the means of library mode and non-laboratory students is significant at the one per cent level. There are no significant differences between the means of the broadcast mode and non-laboratory students on their

TABLE XIII

RESULTS OF TESTS OF DIFFERENCES BETWEEN LIBRARY MODE,
BROADCAST MODE, AND NON-LABORATORY STUDENTS
ON CONVENTIONAL WRITING SKILLS

(N = 1171)

Groups ^a		3	2	1
	Means ^b	133.557	131.108	122.839
1	122.839	10.719 ^e	8.269 ^d	
2	131.108	2.450 ^c		
3	133.557			

The multiplier is 2.33710

- ^a1 Library mode group
2 Broadcast mode group
3 Non-laboratory group

^bF ratio: 10.67; Significance: .01

^cNot significant

^dSignificant at .05

^eSignificant at .01

scores on the conventional writing skills test.

Discussion: The findings reported above are in agreement with some of the studies previously reported in this study but disagree with others reported. Keating, Peters, and Carroll have reported that laboratory students were significantly poorer on tests of written skills; Lorge and the Antioch group reported no significant differences between laboratory and non-laboratory groups; Allen, Bernard and Lorge, and Bauer reported higher achievement by laboratory students.¹ The findings of the present study do not agree with the findings of Bernard and Lorge who reported that the recording-playback groups outranked all other groups.²

II. REGRESSION ANALYSIS

A Stepwise Regression Program was run on the scores of 1031 students to determine which of the variables included in the study accounted for the most variance on the conventional writing skills. Table XIV shows the results of this analysis.

Findings. Total variance accounted for by the variables included in this part of the study was 31.4 per cent. Contributing significantly to the total variance were the students' SCAT scores, French university courses taken by their teacher, their teacher's fluency rating of spoken French, and minutes per week of laboratory use. These were all significant at the one per cent level of confidence. The greatest percentage

¹Supra, p. 21.

²Supra, p. 26.

TABLE XIV
RESULTS OF REGRESSION ANALYSIS OF THE CONVENTIONAL WRITING SKILL
SCORES OF THE ENTIRE SAMPLE

(N = 1031)

Order of entry in regression analysis	Variable name	Per cent of variance accounted for	Significance
1	Student's SCAT score	25.34	.01
2	Number of French university courses taken by student's teacher	1.91	.01
3	Teacher's fluency rating	0.97	.01
4	Minutes per week of laboratory use	0.76	.01
5	School size	0.17	NS
6	Equipment type	0.20	NS
7	Length of his teacher's experience teaching French	0.15	NS
8	Length of teacher's total teaching experience	1.90	NS
Total variance accounted for		31.40	

of variance was accounted for by the SCAT scores. Equipment type did not account for a significant percentage of variance nor did school size, length of teacher's experience teaching French, and length of total teaching experience.

Discussion. The ability of students as measured by the SCAT test in comparison to the other variables overwhelmingly accounted for the greatest percentage of variance on the scores of conventional writing skills. This is interesting and perhaps not unanticipated. Student ability is one variable over which teachers and administrators have little or no control. The apparent relationship between ability and French scores may, perhaps, have no other implication for administrators than in their criteria for selection of students for the French 30 courses. They may have implications as well for counselling students on programs and courses to select. Other variables listed in Table XIV may have implications for staff selection and placement. Although accounting for a very small percentage of variance, several of the teacher variables do seem to have a bearing on student achievement in conventional writing skills. This suggests the assignment of teachers who have more academic preparation in French language instruction and those with greater fluency in speaking French. The implication for in-service programs is probably evident.

The finding that minutes per week of laboratory use contributed significantly to achievement on conventional writing skill scores suggests the need for additional analysis of this variable.

III. AN ANALYSIS OF ACHIEVEMENT AND AMOUNT OF LABORATORY USE

In an attempt to analyze further the finding that minutes per week of laboratory use accounted significantly for the variance in conventional writing skills, a two-way analysis of variance program was run on the 595 laboratory students included in the sample of this study. The purpose of this test was to determine whether there was a relationship between the amount of time spent in the laboratory and achievement. The type of laboratory equipment formed the rows in the analysis while the columns were formed by the amount of time in minutes per week spent in the laboratory. Thirty minutes was used as the dividing line for assigning students because of nearly equal numbers of students falling into each cell. Table XV presents the distribution of the students for this analysis.

Findings. The results of the two-way analysis of variance are reported in Table XVI. The F-ratio of 6.14 significant at the 5 per cent level indicates that there is a significant difference between the means on methods of instruction, that is, language laboratory type. Also significant at the 5 per cent level is an F ratio of 6.10 indicating a significant difference between column means, that is, relative to achievement and amount of use of the language laboratory. There was no significant effect on achievement of the interaction between type of language laboratory and time per week spent using it. The highest achievement was attained by the broadcast mode group using the laboratory 30 minutes or less per week. Lowest achievement was attained by the library mode group using the laboratory more than 30 minutes per week.

Discussion. The findings of this test seem to indicate that

TABLE XV

DISTRIBUTION OF LABORATORY STUDENT SAMPLE BY LABORATORY TYPE
AND MINUTES PER WEEK OF LABORATORY USE

(N = 595)

	30 minutes or less	more than 30 minutes
Library mode students	235	230
Broadcast mode students	62	68

TABLE XVI

MEANS OF CONVENTIONAL WRITING SKILL SCORES OF LABORATORY GROUPS
CLASSIFIED BY MINUTES PER WEEK OF LABORATORY USE

(N = 595)

Type of language laboratory used	Raw score means		
	30 min. or less	More than 30 min.	Both groups
Library mode	125.6	119.9	122.8
Broadcast mode	138.0	125.4	131.1
Both laboratory types	128.2	121.1	124.6

Rows F-ratio: 6.135; Significance .05
Columns F-ratio: 6.095; Significance .05
Interaction: F-ratio: 0.936; Significance NS

generally broadcast mode students performed better than library mode students on conventional writing skills. These findings also serve in confirming the findings reported on Page 53. The findings also seem to indicate that the highest mean score by laboratory students on the conventional writing skills test was made by the groups using the laboratory for 30 or fewer minutes per week. Thus for both language laboratory types time spent in laboratory use and conventional writing skills as measured by the Grade XII Departmental Examinations appear to be inversely related.

The highest mean of any of the cells shown in Table XVI was 138.0 attained by the broadcast mode group using the laboratory 30 minutes per week or less. This mean score is higher than the mean score of the non-laboratory group which was 133.5 as shown in Table XIII. This would seem to indicate that limited use of the broadcast mode language laboratory does improve conventional writing skills but that beyond a certain point further use results in lower student scores on this variable.

IV. DEPTH STUDY OF TWO METROPOLITAN SCHOOLS

The same regression program was run on the written test scores of students in the two large metropolitan schools selected for in depth analysis. The purpose of this analysis was to determine if selected pupil variables, which were impossible to include for the larger sample, contributed significantly to the variance in achievement in French language writing skills.

Findings. Table XVII shows the results of this regression analysis. The total variance accounted, 36.5 per cent, was again

TABLE XVII

RESULTS OF REGRESSION ANALYSIS OF CONVENTIONAL WRITING SKILL
SCORES OF TWO METROPOLITAN SCHOOLS

(N = 140)

Order of entry in regression analysis	Variable name	Per cent of variance accounted for	Significance
1	Student's SCAT score	16.73	.01
2	Length of his teacher's experience teaching French	9.43	.01
3	Lineage of student	4.26	.01
4	Sex of student	2.92	.01
5	Minutes per week of laboratory use	1.68	.05
6	Student level of French study	0.93	NS
7	Socio-economic rating of student's family	0.40	NS
8	Number of French university courses taken by student's teacher	0.12	NS
9	Teacher's fluency rating	0.00	NS
10	Equipment type	0.00	NS
11	School size	0.00	NS
12	Length of teacher's total teaching experience	0.00	NS
Total variance accounted for		36.47	

somewhat low. Contributing significantly at the one per cent level to the variance were the variables: student's SCAT scores, 16.7 per cent; teacher's years of experience teaching French, 9.43 per cent; lineage of student, 4.26 per cent; and sex of student, 2.92 per cent. Minutes per week of laboratory use, contributing 1.68 per cent of the variance, was significant at the 5 per cent level of confidence. Not significant were: student level of French study, socio-economic rating of the student's family, French university courses taken by the teacher, the teacher's self-reported fluency in French, equipment type, school size, teacher's years of total teaching experience.

Discussion. Student scores on the SCAT test accounted for the greatest percentage of variance. This might have been anticipated since there is a correlation of 0.41 (See Appendix C) between the SCAT scores and scores on conventional writing skills which indicates that the higher the SCAT score the higher, generally, is the score on conventional writing skills. When lineage was treated as a continuous variable, that is 1 represented neither parent of French background, 2 represented one parent of French background and 3 represented both parents of French background, a positive correlation between lineage of the student and achievement in French language writing skills was found to exist. Because lineage was found to contribute significantly to the variance as reported in Table XVII this would seem to indicate that the students who have French parents tend to do better in examinations which test writing skills in the French language.

Length of the teacher's experience teaching French contributed 9.43 per cent of the variance. This variable has a positive correlation coefficient with achievement in French language writing skills

which seems to indicate that students whose teacher had more experience in teaching French scored higher on the test of conventional writing skills than did those whose teacher had less of this type of teaching experience. It is important to note that only two teachers were included in this part of the study and generalizing beyond the limited data would be hazardous.

The total of pupil variables included only in the depth part of the study namely, sex of student, lineage, number of years of French instruction and socio-economic level account for 8.51 per cent of the variance. When these findings are compared with the findings reported in Table XII it is evident that pupil variables accounted for almost twice as much of the variance in audio comprehension scores. Over 15 per cent of the variance in audio comprehension was accounted for by these same four pupil variables. Where lineage contributed quite a large amount (12.65 per cent) to audio comprehension the same variable, although contributing significantly to the variance in scores on conventional writing skills, did so to a much lesser degree (4.26 per cent). In some areas there is similarity in the order of entry of variables in the regression equations in other areas the order of entry is quite different. This suggests that a further comparison between audio comprehension scores and conventional writing skills should be made.

V. CORRELATION OF AUDIO COMPREHENSION AND WRITTEN TEST SCORES

To test further the relationship between audio comprehension scores and scores on conventional writing skills of the French language, a Pearson-product-moment correlation between the two sets of scores was run. In order to increase the validity all students included in the original sample were used in this part of the analysis. It will be

recalled that some schools had been included in the sample because they had language laboratories for use but were left out of the earlier analyses because they reported that they did not use the laboratory.

Findings. The mean score for the 1411 students on audio comprehension was 23.18. The mean score on conventional writing skills was 127.11. The correlation between these was 0.52 and is significant at the 1 per cent level of confidence.

Discussion. The above finding reveals that there is a strong tendency for students whose scores are high on the audio comprehension examination to have high scores on the measure of French language writing skills.

VI. WEIGHTING EFFECT

To determine the effect on the students' final French 30 marks the formula of weighting was obtained from the Examinations Branch of the Department of Education. The formula was Final raw score = $((.612 \times \text{Audio}) + \text{Written})/3$.

Findings. The means and ranks of the three groups of French language students on the total French 30 examination were as follows: non-laboratory groups, 49.39; broadcast mode group, 48.37; and library mode group, 45.66. Thus after taking into account the weighting formula when the non-laboratory and the library mode groups were compared, there was a difference in means of 3.73 favoring the non-laboratory group; when the broadcast mode and library mode groups were compared there was a difference in means of 1.01 favoring the non-laboratory group.

Discussion. Since the weighting formula used by the Department of Education places a great deal of emphasis on the scores obtained in

the written skills test and because there were significant differences between the groups on the conventional writing skills examination this difference was reflected in the final raw scores on the 1966 June French 30 Departmental Examination. The non-laboratory group had a higher mean score than either of the laboratory groups. Of the two laboratory groups, the broadcast mode group on the whole fared better than the library mode group especially that portion of the group which used the laboratory 30 minutes or less per week.

VII. SUMMARY

In Chapter V Hypothesis 2 that: There are no significant differences between broadcast mode, library mode, and non-laboratory students on the conventional writing skills of the French language was tested. The hypothesis was tentatively rejected on the basis of the findings of the Newman-Keuls Comparison of Ordered Means Test which showed significant differences between the means of the three groups. The non-laboratory student group scored significantly higher than either of the two laboratory groups. Regression analysis revealed that equipment type did not account for a significant percentage of the variance. It also revealed that there was a significant relationship between well qualified teachers and high achievement on the conventional writing skills examination. Also contributing significantly to the variance was the variable minutes per week of laboratory use and this was further analyzed by a two-way analysis of variance program. When the levels of achievement of the two laboratory groups categorized by amount of use of the laboratory were compared, it was found that the broadcast mode laboratory group, using the laboratory thirty minutes or

less per week scored the highest mean surpassing even that of the non-laboratory group. It seems plausible to conclude that the type of laboratory and amount of use contribute significantly to achievement in conventional writing skills. However, students using the laboratory for a greater period of time scored lower on the average than non-laboratory students.

CHAPTER VI

SUMMARY, CONCLUSIONS AND IMPLICATIONS

In this chapter the study is summarized, conclusions and implications are drawn from its findings.

I. SUMMARY OF THE STUDY

The problem. The language laboratory is a teaching aid generally considered to be an innovation in our country as well as elsewhere; its adoption is not yet universal. Because of the conflicting nature of the findings reported in literature regarding the effectiveness of language laboratories, and because of the relatively high cost of language laboratories for general use in our schools, many school authorities remain undecided as to whether or not funds should be made available for new installations. This study had as one of its purposes to provide school personnel with objective information about the use and effectiveness of language laboratories and thereby to assist these persons in making decisions about whether or not to adopt language laboratories in their schools.

Based on the conflicting reports of research on the effectiveness of language laboratories two null hypotheses for testing in the present study were drawn up. These stated that there are no significant differences in achievement between broadcast mode, library mode, and non-laboratory students on audio comprehension and on conventional writing skills.

Instrumentation and methodology. A questionnaire was sent to all superintendents in the province of Alberta in order to obtain

information regarding the location, type and number of language laboratory installations.

The measures of effectiveness used were the June, 1966, Grade XII Departmental audio comprehension and conventional writing skills test scores for French 30. Control and predictor teacher variables were obtained from questionnaires sent to the teachers who had taught French to the students in the sample during 1965-1966. Ability scores obtained from the Examinations Branch were used as a student variable for control and predictor purposes. Other student data were gathered for a depth study of two large metropolitan schools. School size was also used as a variable in the study.

The sample. All high schools in Alberta having a language laboratory installed earlier than 1966, with the exception of those in the two largest metropolitan areas of the province, were included in the sample. A random stratified sample of non-laboratory schools was taken approximating in number the laboratory schools. A total of forty-nine schools were thus chosen for the study.

It was impossible to obtain completed questionnaires from two of the teachers involved; there were no French 30 students in two of the schools; and in eight of the laboratory schools the laboratory was not used for French 30 instruction. The usable sample was thus reduced to thirty-seven schools. Student and teacher data needed for hypothesis testing was gathered for these thirty-seven schools.

Two large metropolitan schools, one equipped with a language laboratory and the other not, were selected for depth study. Additional pupil information was gathered for this part of the analysis.

Findings. Hypothesis 1 that there are no significant differences in French language audio comprehension between broadcast mode, library mode, and non-laboratory students was largely supported on the basis of the statistical tests performed. When the means were ranked it was found that non-laboratory students had the highest mean score, followed by the library mode group. The lowest mean was achieved by the broadcast mode students. However, the differences between the means of the three groups were statistically not significant.

Regression analysis showed that student SCAT scores, French university courses taken by their teacher, length of the teacher's experience teaching French and length of total teaching experience contributed significantly in that order of entry in the regression equation. Total variance accounted for was 7.77 per cent.

In the depth study of two metropolitan schools the same regression analysis program showed in order of entry that lineage of the student, SCAT scores, length of teacher's experience teaching French, and socio-economic rating of the student's family contributed significantly to the variance. Total variance accounted for by all the variables included in the depth study was 28.61 per cent. This was 20.84 per cent more variance accounted for than in the larger sample. Much of this additional variance accounted for can be attributed to the introduction of the variables lineage and socio-economic rating to the analysis. In both of the regression analyses of audio comprehension scores laboratory equipment did not appear to contribute significantly to the variance between the groups.

Hypothesis 2 that there are no significant differences between broadcast mode, library mode, and non-laboratory students on French

writing skills was rejected on the basis of the statistical analysis performed. The analysis revealed statistically significant differences among means of the three groups on conventional writing skills. The highest mean was achieved by the non-laboratory group and the lowest mean by the library mode group. The difference between the means of the library mode and the broadcast mode groups was significant at the 5 per cent level; the difference between the means of the library mode and non-laboratory students was significant at the 1 per cent level; there were no significant differences between the means of the broadcast mode and non-laboratory students on conventional writing skills.

Regression analysis showed that student SCAT scores, French university courses taken by their teacher, fluency rating of the teacher, and minutes per week of laboratory use, contributed significantly to the variance in conventional writing skill scores. A total of 31.4 per cent of variance was accounted for by the variables included in this part of the study. SCAT scores contributed 25.34 per cent to this total. When the levels of achievement of the two laboratory groups classified by amount of laboratory use were compared the highest achievement was attained by the broadcast mode group using the laboratory 30 minutes or less per week. The lowest achievement was recorded by the library mode group using the laboratory more than 30 minutes per week.

In the depth study of the two metropolitan schools student SCAT scores, their teachers' length of experience teaching French, lineage of student, sex of student, and minutes per week of laboratory use contributed significantly to the variance. A total variance of 36.47 per cent was accounted for by the variables included in this part of the study. This is an increase of 5.07 per cent accounted for by the

additional variables which were not included in the larger sample.

II. CONCLUSIONS

From the findings of this study based upon achievement on 1966 French 30 Departmental Examinations, the following conclusions may be drawn.

1. Non-laboratory student groups perform as well as or better on tests of audio comprehension than laboratory groups.
2. Non-laboratory groups perform generally better on tests of conventional writing skills of the French language than laboratory groups.
3. Broadcast mode students using the laboratory 30 minutes or less per week can perform better on conventional writing skills than students using the same type of language laboratory for more time. They can also perform better than library mode groups in either of the two time intervals tested.
4. Broadcast mode groups seem to perform better than non-laboratory groups on conventional written skills provided that limited rather than extensive use is made of that teaching aid.

II. IMPLICATIONS

To teachers and administrators the findings of this study seem to imply that there is no magic about language laboratories, that the mere presence of a language laboratory teaching aid and indeed the use of this teaching aid, does not necessarily mean better achievement in audio comprehension and written French. In the present study non-laboratory students had a higher mean score than laboratory students. However, it was also apparent that on the average higher French scores

on conventional writing skills were attained by students using one type of laboratory, the broadcast mode, and especially where it was used sparingly.

The extensive use of record and playback facilities may be questionable if the objective is higher achievement on departmental examinations as they were constructed in 1966. That is, it seems that in Alberta better results were attained when facilities for listening only were provided and not when record and playback facilities were used. It may well be that the time spent by the student in practicing speech production and in correcting pronunciation is not as productive in terms of improving audio and conventional writing skills test scores as time spent on alternative activities which the student might undertake during that time.

IV. RECOMMENDATIONS

1. If French continues to become increasingly oral then tests of French language competency cannot remain mainly aural.

2. If Departmental examinations are eliminated it is recommended that individual teachers include oral examinations in French and that achievement on these examinations be used in computing the student's grade in French language competency. It is felt that greater recognition should be given to this facet of French language study.

V. FURTHER RESEARCH

1. In 1969, for the first time, an oral examination was administered to all French 30 students as part of the final examination in this subject. A study similar in methodology to the present study

using these oral scores should be of interest to teachers and administrators and should assist them in decision-making concerning instruction and evaluation of French as a target language.

2. The low percentage of variance accounted by the regression analyses in the present study suggests that other student variables ought to be included in future studies. One suggested is student scores on aptitude for French language study.

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APPENDICES

APPENDIX A

SURVEY OF LANGUAGE LABORATORIES IN ALBERTA SECONDARY SCHOOLS

Room 530,
Education Building,
University of Alberta,
Edmonton, Alberta.
January 2, 1967.

Superintendent of Schools,

Dear

I would like to solicit your help in gathering information regarding the prevalence and use of language laboratories in the secondary schools of Alberta.

Your responses to the questions on the attached page will be used in one part of a study of language laboratories in second language instruction. Another part of the study will concern itself with the achievement of pupils where such laboratories are utilized and that of pupils taught without access to a laboratory. Dr. E. W. Ratsoy of the Department of Educational Administration, Edmonton, Alberta is chairman of my thesis committee.

Please complete the enclosed questionnaire and return as soon as possible in the self-addressed envelope provided. In order to provide a valid survey of the Alberta situation replies from all superintendents are needed. Please note that superintendents of school areas which have no language laboratories in schools under their jurisdiction are requested to answer only Parts A and B.

Thank you for your participation in this survey.

Yours very truly,

Pierre L. Touchette.

SURVEY OF LANGUAGE LABORATORIES IN ALBERTA SECONDARY SCHOOLS

Part A - (To be completed by all superintendents)

 Superintendent of _____
 Signature

Part B - (To be completed by superintendents of areas in which there are as yet no language laboratories)

1. The school board of this area has considered at some time in the past the installation of language laboratories in its schools.
 Yes _____ No _____
 2. The school board is considering the installation of language laboratories in the schools of the area within the next year.
 Yes _____ No _____
-

Part C - (To be completed by superintendents of areas in which there are language laboratories in their schools)

1. The following secondary schools in my area have language laboratories:
 School 1 _____
 Name of school Address of school Year of installation
 School 2 _____
 School 3 _____
 School 4 _____
 (If more than four schools in your area have language laboratories please continue on the back of this page.)
 2. Using the schools by number designated in Question 1 indicate the subject fields in which the laboratories are being used: (please check)
- | | <u>French</u> | <u>German</u> | <u>Ukrainian</u> | <u>Russian</u> | <u>Other</u> (please specify) |
|----------|---------------|---------------|------------------|----------------|-------------------------------|
| School 1 | _____ | _____ | _____ | _____ | _____ |
| School 2 | _____ | _____ | _____ | _____ | _____ |
| School 3 | _____ | _____ | _____ | _____ | _____ |
| School 4 | _____ | _____ | _____ | _____ | _____ |
3. Do the majority of language laboratories in your area provide each individual student with record and playback equipment? Yes _____ No _____
 4. Please make any other comments which you feel are pertinent or which make language instruction in your area somewhat unique.

APPENDIX B

TEACHER QUESTIONNAIRE

11011 - 65 Avenue,
Edmonton, Alberta.
March 31, 1967.

Dear

I am soliciting your help in gathering data for a study of French instruction in this province. A one-page questionnaire pertaining to professional training and teaching experience is enclosed which I would like your French 30 teacher(s) to complete. If your school has a language laboratory there are also questions related to its use in French instruction.

Because the questionnaire will take no longer than three or four minutes to complete I would be very pleased if you could have it filled out and if you could return it in the self-addressed envelope provided. As I have chosen a very small sample for my study 100 per cent returns are required.

Thank you for your participation in this study.

Yours truly,

Pierre L. Touchette.

TEACHER QUESTIONNAIRE

1. Name of teacher _____
2. Name of school _____
3. How many years of full time teaching experience have you had? (Do not include this school year.) CHECK ONE
 - a) _____ 1 to 4 years
 - b) _____ 5 to 9 years
 - c) _____ 10 to 14 years
 - d) _____ 15 years or more
4. In how many of these years have you taught French? _____
5. How many university courses have you completed in the field of French? (Include instructional methods and content courses.) CHECK ONE

None 1 2 3 4 5 6 7 8 more
6. In which of the following subject areas would you prefer to teach? CHECK ONE
 - a) _____ French
 - b) _____ other fields
7. In your opinion, which of the following more closely approximates your fluency in the speaking of French? CHECK ONE
 - a) _____ completely fluent
 - b) _____ moderately fluent
 - c) _____ lacking in fluency
 - d) _____ do not speak French
8. Did you teach French 30 in this school last year? _____ Yes _____ No
9. Does your school have a language laboratory? _____ Yes _____ No

If so, how many minutes per week (on the average) do your French 30 students receive instruction using the language laboratory? _____
10. How many minutes per week (on the average) did your French 30 students receive instruction using the language laboratory last year? _____
11. Is the laboratory used by French 30 students for voluntary or extra work in French? _____ Yes _____ No

APPENDIX C

INTERCORRELATION MATRIX OF VARIABLES USED IN THE STUDY

INTERCORRELATION MATRIX OF VARIABLES USED IN THE STUDY

Variable	1	2	3	4	5	6	7	8	9
1. Fluency rating of teacher									
2. SCAT scores	-0.010								
3. School size	-0.243	0.107							
4. Equipment type	0.076	-0.023	-0.173						
5. Minutes per week of lab use	0.184	-0.012	-0.085	-0.503					
6. Years of teaching experience	0.165	0.007	0.055	0.203	0.073				
7. Years of teaching French	0.051	-0.010	0.157	0.084	0.027	0.886			
8. French university courses taken	-0.198	0.080	0.425	0.230	-0.150	0.277	0.246		
9. Audio score	-0.058	0.186	0.094	0.030	-0.018	0.005	-0.053	0.171	
10. Conventional writing skill scores	0.065	0.503	0.132	0.100	-0.096	0.089	0.004	0.178	

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